

In re Patent Application of:

WU

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IN THE TITLE:

A SHOCK ATTENUATION METHOD AND SYSTEM OF ELASTIC INSOLE FOR THE
INSOLES OF SHOES

IN THE SPECIFICATION:

[01] The present invention relates to elastic insoles for ~~parts and method of shoes,~~ and more particularly, to a shock attenuation method and system for the elastic insoles of shoes.

[02] In conventional ~~the prior art~~ shock attenuation ~~elastic insole systems for~~ ~~of shoes,~~ some shoes have springs set in the hollow interior of the insole, while some shoes have a circulating flow pressure controlling mechanism or a bi-directional flow pressure controlling mechanism. However, ~~But~~ different people may have different body weights, and each ~~the same~~ person may undertake different activities, such as an ordinary walk or a strenuous exercise etc., ~~therefore,~~ Accordingly, ~~from the view of being most cozy to human body,~~ there is a demand for a ~~the~~ shock attenuation system, which is comfortable on the human body, and can be variable for ~~capability at~~ different occasions and to suit ~~or for~~ the different people ~~persons are variable.~~ Unfortunately, in ~~But according to the~~ prior art designs, the shock attenuation and damping-effect capability of the elastic insole ~~of shoes~~ is not adjustable, and therefore does not ~~it can hardly~~ satisfy the user's ~~human~~ requirements.

[03] The present invention relates to ~~aims to provide~~ a shock attenuation ~~method and system for~~ ~~of~~ elastic insoles of shoes with adjustable ~~for adjusting~~ elastic force, which overcome the

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shortcomings of ~~so as to solve the problem in~~ the prior art designs, in which the ~~that~~ shock attenuation and damping effect is not adjustable, ~~and to satisfy requirements of the human body to the utmost extent.~~

[04] The shock attenuation method of elastic insole of shoes according to the present invention is as follows: a shock attenuation system for an insole of a shoe comprising an insole body, and a pressure controller located at a side of said insole body ~~a pressure controller in the elastic insole of shoes has at least two pressure controlling modes, and by adjusting with a screw element, a user may choose to open or close either one of the two pressure controlling modes.~~

[05] The Said pressure controller ~~controlling modes~~ includes a first multi-pipe circulating flow pressure controller ~~controlling mode~~ and a second single-pipe bi-directional flow pressure controller ~~controlling mode~~.

[06] ~~The Said method is realized by a shock attenuation system of elastic insole of shoes including an insole body, said insole body has a pressure controller~~ also includes ~~located at its side, wherein said pressure controller includes a multi-pipe circulating flow pressure controlling means and a single-pipe bi-directional flow pressure controlling means, and an adjusting device is further installed between~~ the first controller ~~said multi-pipe circulating flow pressure controlling means and~~ the second controller for controlling the operation of the first and second pressure controllers. ~~single-pipe bi-directional flow pressure controlling means, and said adjusting device controls the startup of either one of said two pressure controlling means according to user's choice~~

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The adjusting device comprises: a rotatable shaft; a rotating knob on a first exterior end of said rotatable shaft; disc-shaped adjusting heads mounted on said rotatable shaft proximate the middle thereof; and an adjustable tip at a second interior end of said rotatable shaft. In use, rotation of the rotating knob in one direction rotates the rotatable shaft upwards, thereby closing said first flow pressure controller using the disc-shaped adjusting heads while opening the second flow pressure controller using the adjustable tip.

Also, in use, rotation of the rotating knob in an opposite direction rotates the rotatable shaft downwards, thereby opening the first flow pressure controller while closing the second flow pressure controller.

[07] Preferably, the first controller ~~Said multi-pipe circulating flow pressure controlling means~~ includes a first ball valve at an ~~as the entry to of the~~ flow passage, and a vane valve at an ~~as the~~ exit of the flow passage;

[08] Preferably, the second controller ~~Said single-pipe bi-directional flow pressure controlling means~~ includes a second ball valve at an ~~as the~~ access to a ~~of the~~ flow passage, and the ~~said~~ second ball valve is equipped with a spring for pushing the second ball valve into the flow passage;

[09] Preferably, the first ball valve includes a first ball, and the second ball valve includes at least one second ball. Preferably, the ~~Said adjusting device includes a rotation shaft and an adjusting turnbutton connected to the exterior bottom of the rotation shaft; and disc-shaped adjusting heads are sleeved on the middle part of said rotation shaft, wherein by moving said~~

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~~adjusting heads, the balls of the first ball valve may be laterally~~
~~displace the first ball to close the first ball valve displaced;~~
~~and an the adjusting tip is set on the interior top of said~~
~~rotation shaft so as to presses~~ against ~~the second~~ a ball of the
second ball valve ~~and make the ball to displace the second ball~~
longitudinally to open the second ball valve;

[10] The number of the disc-shaped adjusting heads may be set
corresponding to the number of the first balls ~~ball valves~~ to be
controlled.

[11] ~~An~~ The advantages of the present invention is that, the
pressure controller has at least two kinds of pressure control
modes that may be included, for example, a multi-pipe circulating
flow pressure controller ~~means~~ and a single-pipe bi-directional
flow pressure controller ~~means~~, ~~may be included~~. Since the shock
attenuation and damping effect produced by the two flow pressure
controllers ~~controlling means~~ are different, the shock attenuation
and damping capability of the shoes may be adjusted by choosing one
of the said pressure control modes in accordance with the specific
occasion ~~different occasions~~ or the specific ~~different~~ persons, ~~so~~
~~as~~ to satisfy the requirements of the user's foot ~~human body~~
depending on the situation ~~to the utmost extent~~. Since ~~a~~ Disc-
shaped adjusting heads are mounted, like sleeves, ~~sleeved~~ on the
middle part of the rotatable ~~said rotation~~ shaft, whereby moving
the disc-shaped ~~said~~ adjusting heads, laterally displaces the balls
of the first ball valve ~~may be laterally displaced~~. This kind of
oblique periphery design for the disc-shaped adjusting heads can
reduce the wearing of the contacting surfaces between the balls and
the disc-shaped adjusting heads. In addition, as the area of the
~~its~~ bottom of the disc-shaped adjusting heads are ~~is~~ rather large,

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they ~~it~~ can be fixed in the shoes more effectively and the utility of the present invention is improved. A first spring is set below the lower disc-shaped adjusting head, and a second spring is set in the ball valve of the single-pipe bi-directional flow pressure controller, ~~controlling means~~ which pushes downwards against the ball to help the positioning of the pressure controller. In addition, the springs help to reduce the displacement for ~~controlling~~, namely to reduce the lifting amplitude of the rotatable ~~rotation~~ shaft when adjusting the shock attenuation effect, and further improve the practicability and reliability of the present invention. In all, the present invention can adjust shock attenuation and damping effect, is practical and reliable, and can satisfy the human requirements to the utmost extent.

[16] According to Figures 1, 2 and 3 ~~Fig. 1 and Fig. 2~~, the present invention includes an insole body, which. ~~As shown in Fig. 3,~~ ~~said insole body~~ has a pressure controller A located at its side. In the ~~this~~ embodiment, ~~as shown in Fig. 1 and Fig. 2~~, the two pressure controllers ~~controlling means~~ include a multi-pipe circulating flow pressure controller ~~controlling means~~ 1 and a single-pipe bi-directional flow pressure controller ~~controlling means~~ 2. ~~[[,]] furthermore an~~ An adjusting device 3, which controls the startup of either one of the ~~said~~ two pressure controllers 1 and 2 ~~controlling means~~ according to the user's choice, is further installed between the two pressure controllers 1 and 2 ~~controlling means~~.

[17] ~~The~~ ~~Wherein,~~ ~~the~~ multi-pipe circulating flow pressure controller ~~controlling means~~ 1 includes a ball valve 11 as the entry of the flow passage, and a vane valve 12 as the exit of the flow passage. As shown in Fig. 2, a hinge 121 is set in the vane

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valve 12. The single-pipe bi-directional flow pressure controller ~~controlling means~~ 2 includes a ball valve 21 as the access of the flow passage. The adjusting device 3 is used to control the ~~alternate~~ opening and ~~or~~ closing of the control units of the two pressure controllers ~~controlling means~~ 1 and 2.

[18] As shown in Fig. 2, the adjusting device 3 includes a rotatable ~~rotation~~ shaft 31, and ~~an~~ a rotating knob ~~adjusting turnbutton~~ 32 connected to ~~on~~ the exterior bottom end of rotatable ~~said rotation~~ shaft 31. The rotating knob ~~adjusting turnbutton~~ 32 is fastened at the bottom end of the rotatable shaft 31 extending outwardly with respect to the ball valve 11, and the rotating knob ~~adjusting turnbutton~~ 32 is engaged with the rotation shaft 31 by screw threads. A concave recess 4 is set in the insole ~~correspondingly~~ for receiving ~~mounting~~ the rotating knob ~~adjusting turnbutton~~ 32. A leak resistant ring seal 314 is set between the rotating knob ~~adjusting turnbutton~~ 32 and the rotatable ~~rotation~~ shaft 31, and a cage nut 315 is set on the leak resistant ring seal 314. Disc-shaped adjusting heads 311 are mounted, like sleeves, ~~sleeved~~ on the middle part of the rotatable ~~said rotation~~ shaft 31, and whereby moving ~~said movement of the~~ adjusting heads 311, laterally displaces the balls 111 of the ball valve 11 ~~may be laterally displaced~~. A spring 313 is set below the lower disc-shaped adjusting head 311. An adjustable ~~adjusting~~ tip 312 is set on the interior top of ~~said rotation~~ the rotatable shaft 31 ~~so as to press~~ for pressing against a ball 211 of the ball valve 21 and to make the ball 211 displace along the longitudinal axis of the rotatable shaft 31 ~~longitudinally~~. A spring 212 is set within the ball valve 21 so as to downwardly push against the ball 211.

[19] In the present invention, the adjusting device 3 controls the

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opening and [[or]] closing of the ball valve 11 of the multi-pipe circulating flow pressure controller ~~controlling means~~ 1 and the ball valve 21 of the single-pipe bi-directional flow pressure controller ~~controlling means~~ 2 alternately by rotation thereof a screw element. As shown in Fig. 1 and Fig. 2, the rotatable rotation shaft 31 is moved upwards by adjusting the rotating knob adjusting turnbutton 32. As the rotatable shaft 31 is moved upwards, ~~And in the multi-pipe circulating flow pressure controlling means 1,~~ the balls 111 are [[is]] moved outwardly by the adjusting heads 311 until outwards till the ball valve 11 is closed. In the mean time, in the single-pipe bi-directional flow pressure controller ~~controlling means~~ 2, the ball 211 is pushed away from the flow passage access of the ball valve 21 by the adjustable adjusting tip 312, thereby, the single-pipe bi-directional flow pressure controller ~~controlling means~~ 2 is opened and the multi-pipe circulating flow pressure controller ~~controlling means~~ 1 is closed. Alternatively In contrary, as shown in Fig. 1 and Fig. 2, the rotatable rotation shaft 31 can also be is moved downwards by the rotating knob adjusting turnbutton 32. Accordingly, in [[In]] the single-pipe bi-directional flow pressure controller ~~controlling means~~ 2, the ball 211 212 is moved downwards till it blocks the flow passage access of the ball valve 21. In the mean time, in the multi-pipe circulating flow pressure controller ~~controlling means~~ 1, the ball 111 returns toward the center of the rotatable shaft, thereby, the flow passage of the ball valve 11 is opened. ~~, that is to say that~~ As a result, the multi-pipe circulating flow pressure controller ~~controlling means~~ 1 is opened and the single-pipe bi-directional flow pressure controller ~~controlling means~~ 2 is closed. In such a way, the ball valves 11 and 21 are opened and closed alternately by adjusting the rotating knob adjusting turnbutton 32. It could be seen from the above that

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the adjusting device 3 controls the opening or closing of the control valves of the two kinds of pressure controlling modes by a screw element. In such a way, the present invention introduces a multi-pipe circulating flow pressure controlling mode for [[by]] the multi-pipe circulating flow pressure controller ~~controlling means~~ 1 and a single-pipe bi-directional flow pressure controlling mode for [[by]] the single-pipe bi-directional flow pressure controller ~~controlling means~~ 2, and one of said pressure controlling modes is selected to be opened or closed alternately by the adjusting device 3 ~~a screw element~~. The multi-pipe circulating flow pressure controller ~~controlling means~~ 1 or the single-pipe bi-directional flow pressure controller ~~controlling means~~ 2 of the present invention could be a pressure controller ~~controlling means~~ for liquid or gas flow.

[20] In practical use, the number of the disc-shaped adjusting heads 311 may be set corresponding to the number of the ball valves to be controlled. In this embodiment ~~are described in details~~ the ~~principle,~~ structure and working process of the two pressure controlling modes adopted in the pressure controller A are described, namely the multi-pipe circulating flow pressure controlling mode and the single-pipe bi-directional flow pressure controlling mode. Similarly, the pressure controller A could adopt two different kinds or more than two kinds of pressure controlling modes as well. As for the principle and structure, they are the same as or similar to the above description, which could be implemented by a technical person in this field without creative work. Therefore, it is not necessary to describe in details here.